

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

Claims 1 to 19 (cancelled).

Claim 20 (amended):

A gas-phase biofilter system comprising: a housing; an inlet provided to said housing for receiving contaminated air; an outlet provided to said housing for exhausting cleaned air; and a biofilter media situated between said inlet and said outlet through which said contaminated air flows, wherein said biofilter media comprises: a porous hydrophilic nucleus; and a hydrophobic coating on said hydrophilic nucleus, wherein said hydrophobic coating comprises: a metallic agent; microorganisms; nutrients; an organic carbon source; alkaline buffer; a bonding agent; an adsorptive agent; and a hydrophobic agent.

Claim 21 (amended):

21. A gas-phase biofilter system according to claim 18~~20~~, further including a water delivery system for providing moisture to said biofilter media.

Claim 22 (withdrawn):

A method of operating a biofilter system, said biofilter system comprising a housing and a biofilter media, said method comprising: monitoring a temperature of said biofilter media; selectively heating an air stream flowing through said biofilter media or irrigating said biofilter media based on said monitoring to maintain said temperature within a predetermined range.

Claim 23 (withdrawn):

A method of operating a biofilter system according to claim 22, further comprising: monitoring air pressure within said housing; and selectively heating an air stream flowing through said biofilter media or irrigating said biofilter media based on said pressure monitoring to maintain said pressure within a predetermined pressure range.

Claims 24 (withdrawn):

A method of operating a biofilter system according to claim 22, wherein said heating of said air stream comprises delivering steam to said air stream.

Claims 25 (withdrawn):

A method of operating a biofilter system according to claim 22, wherein said irrigation further comprises the addition of nutrients, inoculums and alkaline buffers.

Claim 26 (new):

A method for removing odour causing compounds from waste gas, the method comprising urging waste gas to flow through a gas-phase biofilter having a biofilter media, the biofilter media including a plurality of grains, each grain having:

a porous hydrophilic nucleus; and

a hydrophobic coating on the hydrophilic nucleus, the hydrophobic coating including a metallic agent, microorganisms, nutrients, organic carbon, an alkaline buffer, a bonding agent; an adsorptive agent, and a hydrophobic agent.

Claim 27 (new):

The method of claim 26 wherein the hydrophilic nucleus is a porous low-density aggregate.

Claim 28 (new):

The method of claim 27 wherein the porous low density aggregate is produced by gas expansion at temperatures exceeding 1100 degree °C.

Claim 29 (new):

The method of claim 26 wherein the metallic agent includes at least one metal selected from the group consisting of iron, manganese, nickel, copper, titanium.

Claim 30 (new):

The method of claim 26 wherein the metallic agent includes iron.

Claim 31 (new):

The method of claim 26 wherein the metallic agent is in powdered form prior to formation of the hydrophobic coating.

Claim 32 (new):

The method of claim 26 wherein the adsorptive agent and the hydrophobic agent include clinoptilolite.

Claim 33 (new):

The method of claim 32 wherein the adsorptive agent and the hydrophobic agent further include activated carbon.

Claim 34 (new):

The method of claim 26 wherein the microorganisms are provided by including a source of inoculant.

Claim 35 (new):

The method of claim 26 wherein the microorganisms are selected from the group consisting of *Thiobacillus (T) thioparus*, *beggiatoa*, *thiothrix genera*, and *T. feroxidants*.

Claim 36 (new):

The method of claim 26 wherein the microorganisms, nutrients and organic carbon are provided by at least one of peat, compost and a coarse wood-based material.

Claim 37 (new):

The method of claim 26 wherein the nutrients include phosphorus, nitrogen and potassium.

Claim 38 (new):

The method of claim 34 wherein the source of inoculant includes microorganisms and a nutrient source.

Claim 39 (new):

The method of claim 34 wherein the source of inoculant is a standard laboratory bacterial growth medium containing microorganisms.

Claim 40 (new):

The method of claim 39 wherein the standard laboratory bacterial growth medium is agar or broth.

Claim 41 (new):

The method of claim 26 wherein the alkaline buffer is selected from the group consisting of silicates, fly ash and similar alkaline material.

Claim 42 (new):

The method of claim 26 each grain has a size of approximately between 2 and 25 (mm) millimeters.

Claim 43 (new):

The method of claim 26 wherein the pH of the biofilter media is between approximately 2 and 7.

Claim 44 (new):

The method of claim 26 wherein the odour causing compounds include hydrogen sulphide.

Claim 45 (new):

The method of claim 26 wherein the odour causing compounds include volatile organic compounds.

Claim 46 (new):

The method of claim 26 wherein the odour causing compounds include organic sulphides.

Claim 47 (new):

The method of claim 26 wherein the odour causing compounds include inorganic sulfur.

Claim 48 (new):

A gas-phase biofilter system according to claim 21, wherein the moisture provided by said water delivery system is in the form of one of water and steam.

Claim 49 (new):

A gas-phase biofilter system according to claim 21, wherein the water delivery system includes a steam generator for supplying steam to said biofilter media.

Claim 50 (new):

A gas-phase biofilter system according to claim 21, wherein the water delivery system includes irrigation conduits to deliver the water to said biofilter media.

Claim 51 (new):

A gas-phase biofilter system according to claim 50, wherein the water delivery system further includes nozzles operatively connected to the irrigation conduits for spraying water onto said biofilter media.

Claim 52 (new):

A gas-phase biofilter system according to claim 50, wherein the water delivery system includes a flow meter for controlling the flow of water through said irrigation conduits.

Claim 53 (new):

A gas-phase biofilter system according to claim 20, wherein the housing includes a drain line in fluid communication with the biofilter media for removing excess water therefrom.

Claim 54 (new):

A gas-phase biofilter system according to claim 20, further including sensor means operatively connected to said biofilter media.

Claim 55 (new):

A gas-phase biofilter system according to claim 54, wherein said sensor means includes a temperature sensor for measuring the temperature of said biofilter media.

Claim 56 (new):

A gas-phase biofilter system according to claim 54, wherein said sensor means includes a pressure sensor for measuring the pressure at which the contaminated air flows through said biofilter media.

Claim 57 (new):

A gas-phase biofilter system according to claim 54, wherein said sensor means includes a pH monitoring probe, said pH monitoring probe being disposed in said outlet.

Claim 58 (new):

A gas-phase biofilter system according to claim 54, further including a control system operatively connected to said water delivery system and said sensor means, said control system being operable to actuate the water delivery system in response to input received from said sensor means.

Claim 59 (new):

A gas-phase biofilter system according to claim 58, wherein:
said sensor means includes a temperature sensor for measuring the temperature of said biofilter media; and
said control system is operable to actuate the water delivery system to adjust the moisture being delivered to said biofilter in response to input received from said temperature sensor.

Claim 60 (new):

A gas-phase biofilter system according to claim 58, wherein:
said sensor means includes a pressure sensor for measuring the pressure at which the contaminated air flows through said biofilter media; and
said control system is operable to actuate the water delivery system to adjust the moisture being delivered to said biofilter in response to input received from said pressure sensor.

Claim 61 (new):

A gas-phase biofilter system according to claim 58, wherein:
said sensor means includes a pH monitoring probe for measuring the pH of said biofilter media;
and
said control system is operable to adjust the pH of said biofilter media in response to input received from said pH monitoring probe.

Claim 62 (new):

A gas-phase biofilter system according to claim 20, further including a humidification chamber disposed within said housing between said inlet and said biofilter media for moistening the contaminated air prior to entry of the contaminated air into said biofilter media.

Claim 63 (new):

A gas-phase biofilter system according to claim 62, wherein the contaminated air is moistened within the humidification chamber using one of: (a) a pneumatic spray; (b) high-pressure water; and (c) steam.

Claim 64 (new):

A gas-phase biofilter system according to claim 62, further including a steam generator operatively connected to the humidification chamber for delivery of steam thereto.

Claim 65 (new):

A gas-phase biofilter system according to claim 20, wherein said hydrophilic nucleus is a porous low-density aggregate.

Claim 66 (new):

A gas-phase biofilter system according to claim 65, the porous low density aggregate is produced by gas expansion at temperatures exceeding 1100 degree °C.

Claim 67(new):

A gas-phase biofilter system according to claim 20, wherein the metallic agent includes at least one metal selected from the group consisting of iron, manganese, nickel, copper, titanium.

Claim 68 (new):

A gas-phase biofilter system according to claim 20, wherein the metallic agent includes iron.

Claim 69 (new):

A gas-phase biofilter system according to claim 20, the metallic agent is in powdered form prior to formation of the hydrophobic coating.

Claim 70 (new):

A gas-phase biofilter system according to claim 20, wherein the adsorptive agent and the hydrophobic agent include clinoptilolite.

Claim 71 (new):

A gas-phase biofilter system according to claim 70, wherein the adsorptive agent and the hydrophobic agent further include activated carbon.

Claim 72 (new):

A gas-phase biofilter system according to claim 20, wherein the microorganisms are provided by including a source of inoculant.

Claim 73 (new):

A gas-phase biofilter system according to claim 72, wherein the microorganisms are selected from the group consisting of *Thiobacillus (T) thioparus*, *beggiatoa*, *thiothrix genera*, and *T. feroxidants*.

Claim 74 (new):

A gas-phase biofilter system according to claim 20, wherein the microorganisms, nutrients and organic carbon are provided by at least one of peat, compost and a coarse wood-based material.

Claim 75 (new):

A gas-phase biofilter system according to claim 20, wherein the nutrients include phosphorus, nitrogen and potassium.

Claim 76 (new):

A gas-phase biofilter system according to claim 20, wherein the source of inoculant includes microorganisms and a nutrient source.

Claim 77 (new):

A gas-phase biofilter system according to claim 76, wherein the source of inoculant is a standard laboratory bacterial growth medium containing microorganisms.

Claim 78 (new):

A gas-phase biofilter system according to claim 77, wherein the standard laboratory bacterial growth medium is agar or broth.

Claim 79 (new):

A gas-phase biofilter system according to claim 20, wherein the alkaline buffer is selected from the group consisting of silicates, fly ash and similar alkaline material.

Claim 80 (new):

A gas-phase biofilter system according to claim 20, each grain has a size of approximately between 2 and 25 (mm) millimeters.

Claim 81 (new):

A gas-phase biofilter system according to claim 20, wherein the pH of the biofilter media is between approximately 2 and 7.